A few Random Thoughts on mass movement of Lepidoptera or Pseudo-Migration.

The so-called "Migration of Insects" is a subject, which occupies a deal of valuable space in an ever increasing nnmber of our current magazines, but, in spite of the large number of observations recorded, our knowledge of the urge seems, as a member of the South London Entomological and Natural History Society said to me the other week to have "got no forruder." Doubtless the consideration of this biological question has been hampered from the first by the adoption and misapplication of the term "migration"; a term which was bred and born in association with vertebrate, sentient organisms, and an utterly unsuitable term to use with its mass of associations, in dealing with questions relating to the non-vertebrate Orders. The term cannot be used without implying instruction (from parents, etc.), observation, experience, reason, etc., coupled with a duration of life to acquire such equipment necessary for true migration in the vertebrate sense.

Now look at the vast majority of (I almost said all) the records. They are bald, naked, simple facts of occurrence, unconnected observations and are practically useless. Let me give an example or two. It has been recorded by several observers that an extremely abundant swarm of *Plusia gamma* appeared at Hastings coming in from the sea. That was the bald fact alone, except that the individuals dispersed or disappeared in the course of some days. Whence did they come? Whither did they go? The swarm was met on the shore of Hastings and we have no evidence of the extent of the swarm along either the east or west of Hastings. Did any one record them during their journey from the French coast? Where on that coast did they breed? Such a huge mass if reared in a limited area should have left traces of the larval feasts. Or did they assemble at some suitable spot from surrounding areas? and what induced them to take on this conspicuous mass movement? It could not be want of food; it could not be parental instruction (imitation). Which way was the prevailing current of air at that time? Insects are well known not only to be carried by the wind but to fly against it. The lights of Hastings could not have been an initial start of the movement at that distance, but they may have been a secondary factor, which caused the mass of the individuals to converge upon the shores of the town. For "whence" then we find nothing but conjecture. Whither did they go? The report tells us that the mass of individuals more or less rapidly passed on. But where, how and whither? Among the numbers of nature lovers in the S.E. Counties of England how many recorded sections of this mass in their progress inland? I think I am correct in saying that less than half a dozen observations of *P. gamma* were made in the week or two succeeding the advent of this swarm. When organisms have, from some cause or other, become massed, as soon as congenial circumstances arise they proceed to separate, to disperse. That is what took place in the case of this Hastings incursion. Dispersal pure and simple, strongly evidenced by some going away seaward again, which action caused the erroneous observation that it was a "return migration," implying by the use of the term "migration" that they were conscious of the purpose of their effort. We get no further from

this observation because it is not accompanied by a host of prae- and post-observations to carry it further.

Now let us take another class of observation. A number of examples of *P. gamma* are observed in a suburban garden hovering over flowers, wind S.S.E., about midday. They pass off from W. to E. I take it that these *P. gamma* flew over to the next garden, not over the house, that the road ran E. to W. and that the garden faced S.; apparently the *gamma* were not all together but at times during an hour or two. This was in Morden, Surrey, 19th June. This observation is of no use unless previous and subsequent chains of records are obtained on that and other close dates.

It is not inferred that such observations should not be recorded but that to be of use they must be reinforced by a great many more observers and widely spread, such as children in our schools. But do not let our investigation be prejudiced by the use of the misnomer "Migration." We are dealing with a phase of the natural dispersal of organisms just as the student of physical phenomena deals with the massing and dispersal of particles of inert matter under the forces of attraction and repulsion.—Hy.J.T.

New Finnish race of Scolitantides orion, Pall., compared with the others of the species.

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A fine series of *S. orion*, collected by H. W. Brandt, during the first days of June, 1936, in the neighbourhood of Sordavala (Serdobol), in southern Finland, affords a strikingly peculiar aspect and is by far the most lovely race of the species known to this day. Its closest ally is form *ornata*, Stdgr., but it differs from it by not being smaller than the nominotypical *orion* of Russia, by the far greater extent and the lighter tinge of the blue on upperside and by the total, or nearly total, obliteration of the orange band on underside. It is the only race in which the upperside can be described as entirely blue in both sexes, with large, black marginal dots surrounded by bluish-white rings, so that it somewhat recalls the aspect of male *baton* and *vicrama*; its tone is also lighter and clearer than usual, as in the two latter, but it is, either very slightly or more thickly, especially in the female, suffused with black scales (they are often dense on the hindwing) and there is a row of faint and shaded black, praemarginal, spots before the whitish rings, which are the remnants of the continuous black band always present in the other races, including *ornata*, as figured, for instance, by Seitz and as represented from Turkestan in my collection. It is noteworthy that there is always a large, black, discocellular spot on the forewing, but in none of my males are there any dots of the discal row and a few are present only in one female out of six. The other very peculiar feature, I see in no other *orion*, consists, in the aforesaid disappearance of the characteristic orange band, on the underside: in some specimens there are no traces of it left, in others a few, pale, russet scales are perceptible, here and there, where the band usually is, whilst, in others still, the latter is represented by a continuous, but narrow area, sprinkled with scales of that colour, mixed with black ones, which give it a dull, dirty, look. I propose naming this extreme